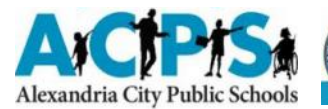




## PATRICK HENRY RECREATION CENTER

FEASIBILITY STUDY - 2nd Draft - June 8, 2015





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# 01 EXECUTIVE SUMMARY

## INTRODUCTION

The existing Patrick Henry Recreation Center is approximately 9,400 sf of shared space with the adjacent Patrick Henry K-5 School. This feasibility study evaluates demolishing the existing Recreation Center and constructing an upgraded, new green building on the same site. Sorg architects met with the community, stakeholders and RPCA to develop an architectural program and identify priorities for the design. Information guiding the project was also obtained from the 2008 Feasibility Study done by the Lukmire Partnership, which looked at renovating and expanding the existing Recreation Center, as well as the December 2014 study by Brailsford and Dunlavey, which considered the possibility of an indoor field along with the economics of facility. In addition, the 2014 Patrick Henry Facility Survey was the basis for the programmatic functions included in the design.

## PROPOSED DESIGN OPTIONS

Along with the adjacent construction of a new K-8 school, construction of a new recreation center is proposed. This study includes three different options for the Recreation Center building, indicated as Community Center Option A and B, and Neighborhood Center Option. These three options are shown in three different configurations on the site plan which is based on the Site Option 2 included in the Patrick Henry School feasibility report under separate cover. These options are indicated as option 2.1, 2.2, and 2.3

The three building options, ranging from 17,000 to 38,000 sf, include a running/walking track, flex court, multipurpose room, and fitness room. Options A and B include an indoor multi-use recreation space, option C omits it.

This study proposes three different relationships between the Recreation Center and the School. In Option 2.1, the Recreation Center is free standing, independent from the school. In Option 2.2, the Recreation Center is attached through a corridor. From the outside, it looks like a separate structure. Doors in the corridor separate the buildings for security. In Option 2.3, the Recreation Center appears to be part of the same building as the school, though it has a separate lobby and doors to a corridor leading to the school. All of these options allow for functional separation, security, and an independent entrance for Recreation. Option 2.3 allows for the easiest access to shared spaces between the two buildings.

## CONSTRAINTS

This project is influenced by several constraints:

- Location of School building
- Access to Recreation Center preferred from Taney Avenue
- Existing Recreation Center must be demolished before construction since new recreation center is in the same location
- Respecting the smaller scale residential context
- Topography
- Zoning and other regulatory requirements
- Budget

## DESIGN GOALS

- Clear, separate entrance from the school
- Visibility from Taney Ave
- Continuity of open space around the Recreation Center
- Convenient site access
- Provide state-of-the-art green Recreation Center and outdoor amenities
- Deliver project design within CIP budget

## CONCLUSION

All options work with the site and proposed school and are feasible for the project. Each option has a different program, cost, and architectural relationship to the school. Each design responds appropriately to the constraints highlighted above. This has resulted in each option being placed in more or less the same physical location. The northwest corner of the site balances the relationship with the school with the need for the Recreation Center to have its own independence. The advantages and disadvantages of each option are discussed in this report.





02.1 EXISTING SITE ANALYSIS | SITE OVERVIEW



SITE ZONING

The existing school, recreation center, parking lot, play areas, athletic fields and tennis courts are located in a **R12 zone**, adjacent to a wooded area at the north end of the site, which is a Public Open Space zone, a separate parcel of land. The area surrounding the site consists of several residential zones of varying density. Indoor and outdoor recreational facilities designed to serve the neighborhood are permitted per Special Uses (section 3-203, 6-105)

LOT REQUIREMENTS (SECTION 3-205)

Proposed designs comply with all lot requirements as follows:

	R12 Zone	Existing	Proposed
Minimum Lot Size	12,000 sf	568,841 SF, complies	No change
Minimum Lot Width	95 ft	333.44 ft, complies	No change
Lot Frontage	45 ft	333.44 ft, complies	No change

BULK AND OPEN SPACE REGULATIONS (SECTION 3-206, 6-106, 7-2100)

Proposed designs comply with all bulk and open space requirements as follows:

	R12 Zone
Front Yard	35 ft minimum
Side Yard	2 yards w/ a setback ratio of 1:1 and a min. size of 25 ft
Rear Yard	Setback ratio of 1:1 and a min. size of 25 ft
Special Setback	n/a
Landscaping	n/a
FAR	0.30
Height	40 ft max for school use, 60 ft max with a SUP



# 02.1 EXISTING SITE ANALYSIS | SITE FEATURES & DEFICIENCIES

- Existing grades range from flat to moderate for the majority of the site, most grades are less than 5%
- A ridge line extends from the corner of Taney & N. Latham to an apex at the tennis court



- Fields are not available for use by the Recreation Center or the community during school hours
- Bus loop cuts off field from the Recreation Center



Small-scale residential homes along N Latham St.

Site drains to a collection point at the intersection of N. Latham St and Taney Ave.



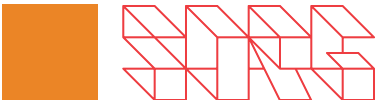
Underutilized tennis court located on a hill. Tennis court sits 15 feet higher than the rest of the property



Recreation Center is not visible from Taney Ave. No separate identity for the Recreation Center



- Buses, cars, and service vehicles share a single drive/parking lot; unsafe and inefficient
- No site drop-off or pick-up area
- Insufficient site lighting





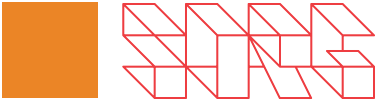
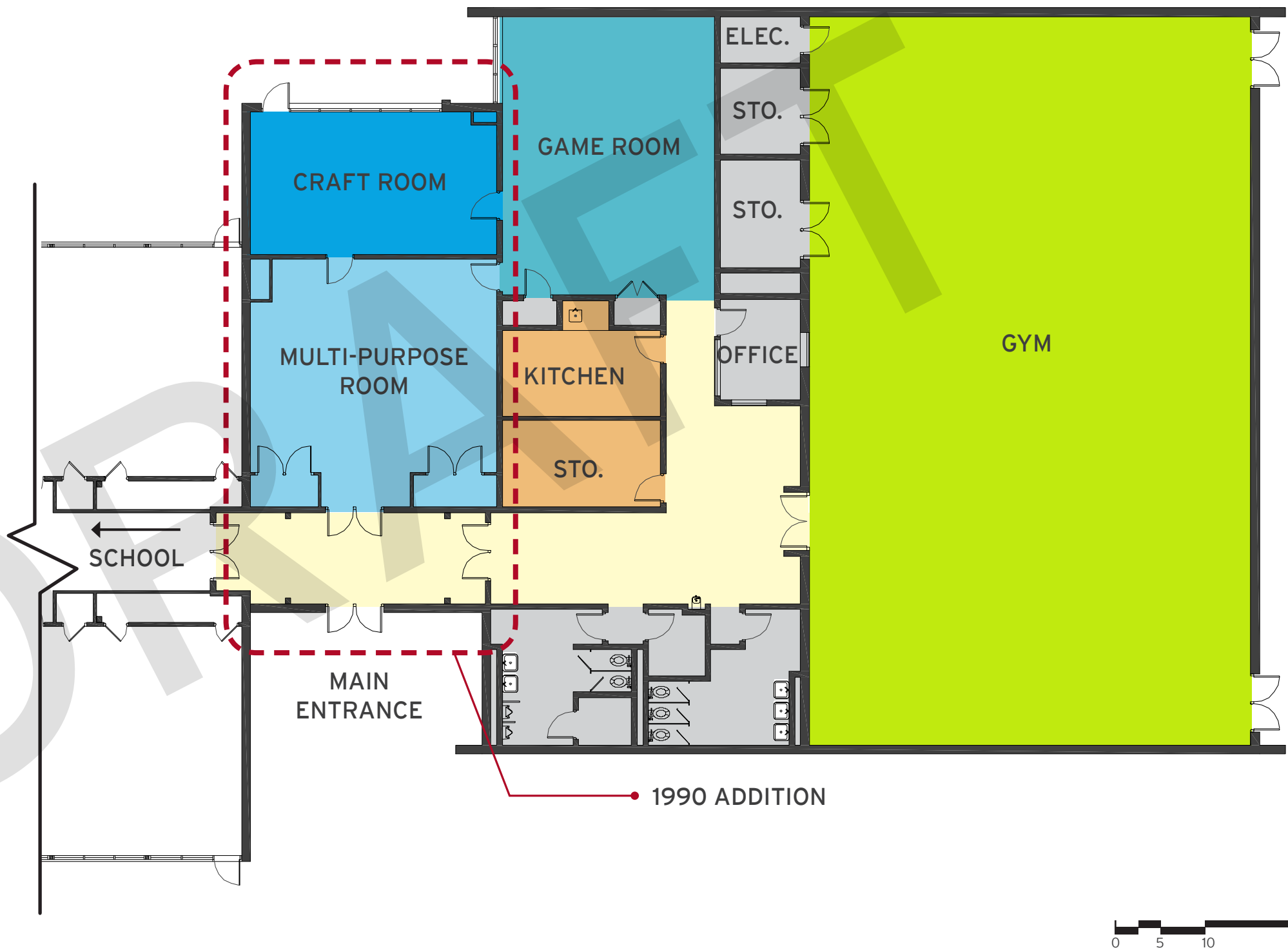
# 02.2 EXISTING BUILDING ANALYSIS | BUILDING OVERVIEW

## BUILDING SUMMARY

- Located on the northeast corner of the property
- Directly attached to the north wing of Patrick Henry Elementary School
- Originally built in 1973, with addition in 1990
- 9,400 SF, one-story load-bearing masonry building
- Includes multipurpose room, craft room, game room, kitchen, office, storage, and elementary school-size gym

## BUILDING DEFICIENCIES SUMMARY

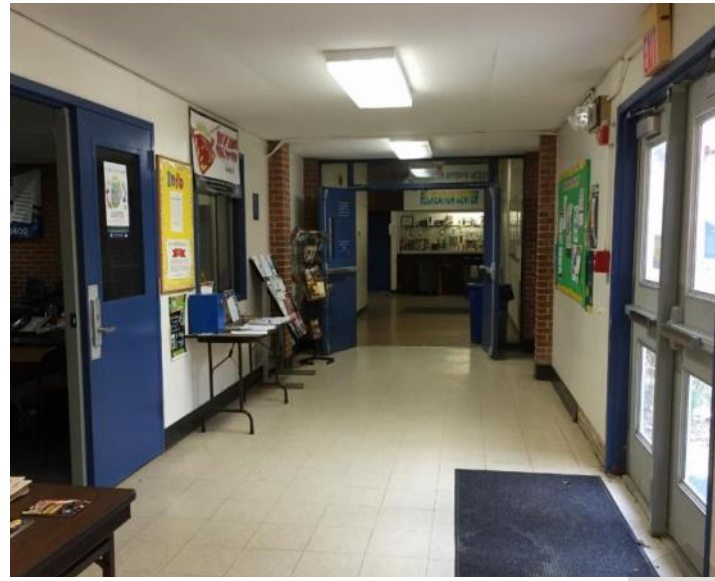
- Main entrance is not visible from the street
- Entrance is not clear, tucked behind building volumes
- Limited natural light in most interior spaces
- Low-quality original construction methods have deteriorated quickly
- Exterior envelope requires significant repair to return to a water tight condition
- Finishes show wear and tear
- Interior feels more like an extension of the school than a community Recreation Center
- Layout encourages compartmentalization rather than social interaction
- Bearing wall construction limits layout possibilities in a renovation
- Interior spaces are located such that there is no direct access to the exterior
- Existing building does not meet accessibility requirements



## 02.2 EXISTING BUILDING ANALYSIS | ARCHITECTURAL DEFICIENCIES



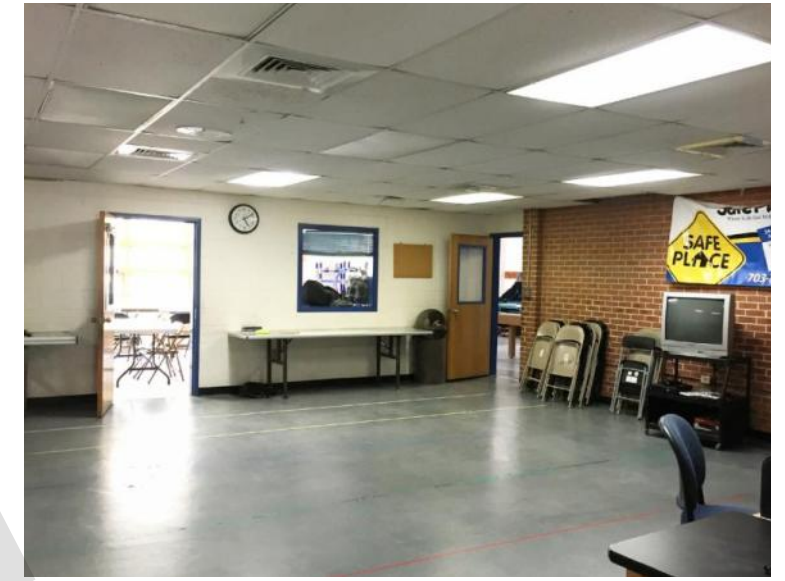
MAIN ENTRANCE



ENTRANCE LOBBY



GYMNASIUM



MULTI-PURPOSE ROOM

### PROGRAM

- Insufficient space to accommodate programs in Needs Assessment
- No lobby space or reception
- Non-regulation size gym limits possible programs in the gym

### SPACE

- Multi-purpose room has no natural light
- No waiting area for convenient pick-up/ drop-off
- Gymnasium is not divisible limiting flexibility
- Gymnasium is not regulation size limiting use for games
- Restrooms do not meet ADA requirements
- Vestibule is not large enough to act as a lobby, does not have a reception desk
- 8'-0" ceiling height in multipurpose room limits possible activities
- Small size of multipurpose rooms, 800 sf not large enough to be flexible for many uses

### COMMUNITY USE

- No community access during school hours
- Current design optimizes shared use with school rather than community access

### LAYOUT

- Entrance is through a corridor
- Craft room is only accessible through Multi-purpose room and Game room
- Lack of visual connection between office and main entrance
- Restrooms are not ADA compliant

### OPERATIONAL

- No reception area; security concern
- Recreation Center cannot offer programming during school hours
- Unable to access school computer rooms during school hours

### EXTERIOR ENVELOPE

The following deterioration was observed due to water infiltration:

- Rusting of structural steel
- Cracking masonry
- Deterioration, efflorescence and staining of exterior concrete
- Poor foundation drainage conditions





## 02.2 EXISTING BUILDING ANALYSIS | STRUCTURAL & MEP

### STRUCTURAL

The existing structural system consists of:

- Steel roof joists and infill structural steel beams supported on CMU bearing walls
- Wall footings are designed for an assumed 2000 psf soil bearing pressure

### MECHANICAL

The existing mechanical systems is 15 years old and not functioning well.

- Consists of roof top DX packaged units
- Units are inefficient and near the end of their life
- Outdated, does not meet current code

### ELECTRICAL

The electrical distribution system is from 2011 and is 2500A, 120/208V, 3phase, 4wire switchboard with new utility meter.

- There is no generator
- Light fixtures for egress are provided with battery backup, not current technology
- Lighting fixtures are fluorescent and have reached the end of their serviceable life
- There is no centralized lighting control system

### PLUMBING

Plumbing systems are original except for a domestic water heater, installed in 2011.

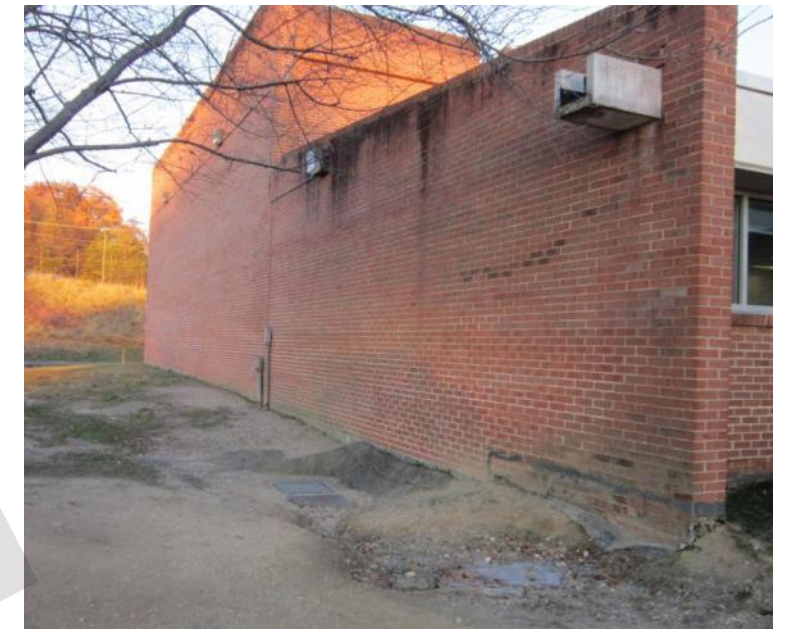
- Fixtures are inefficient
- Fixtures do not meet LEED requirements

### FIRE PROTECTION

Building is currently not sprinklered.



DETERIORATION OF MP-ROOM CEILING



DETERIORATED EXTERIOR WALL

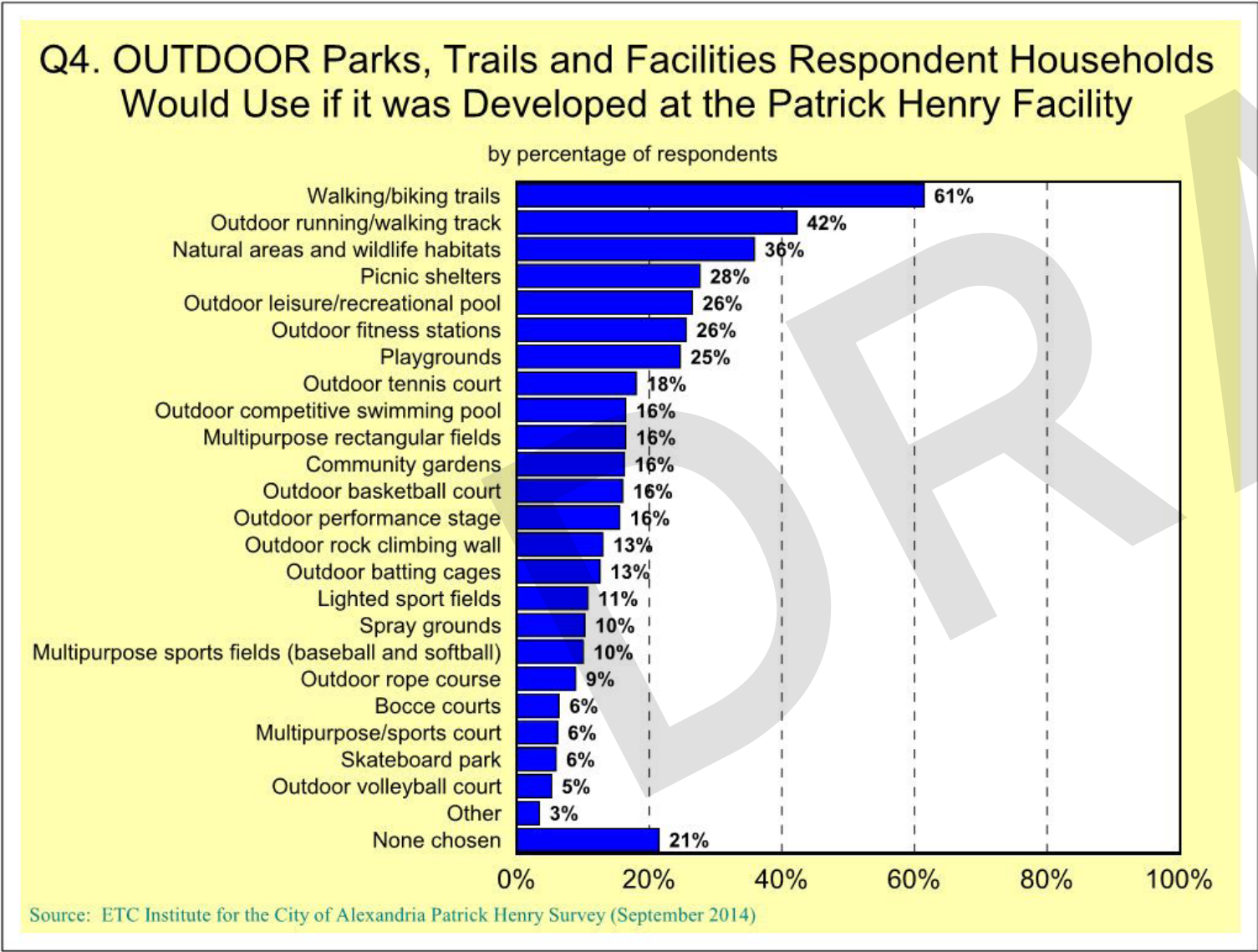




# 03.1 PROPOSED SITE PROGRAM | NEEDS ASSESSMENT

## NEEDS ASSESSMENT - OUTDOOR PROGRAM

The site program developed for Patrick Henry Recreation Center is based on the outdoor recreational facilities desired by the community, identified in the 2014 Patrick Henry Facility Survey, shown below. All three proposed site plan options provide flexible-use spaces to accommodate majority of outdoor activities desired by the community. The diagram on the right illustrates all outdoor activities accommodated in the proposed site plan options.



### PROPOSED PROGRAMS

#### PLAYGROUNDS

Playgrounds

#### TURF COURT

Volleyball  
Small-sided soccer  
Small-sided Rugby  
Small-sided Field Hockey  
Small-sided Lacrosse

#### PAVED COURT

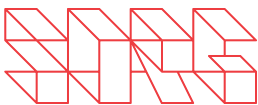
Basketball  
Outdoor Performance Space

#### MULTI-USE RECREATIONAL SPACE

Rugby  
Field Hockey  
Soccer  
Lacrosse  
Football  
Baseball

#### WOODED AREA

Natural area and Wildlife habitats  
Walking Trails  
Fitness stations  
Bike trail





# 03.2 PROPOSED SITE PROGRAM | DETAILED PROGRAM

## SITE PROGRAM

The site program includes parking, age-appropriate playgrounds, two multi-purpose courts and one grass multi-use recreational space.

## CAR PARKING

**School** - Per zoning requirements 2 spaces are to be provided per classroom.

**Recreation Center Building Option A and B** - The existing zoning code does not include a category for the indoor multi-use recreational space. The proposed number of parking spaces will accommodate the users of the recreation center and the outdoor field space. During the design phase further refinement of the number of parking spaces will be done per discussions with RPCA, T&ES, Planning and Zoning, and through the development of a traffic study

School Car Parking Spaces:	70 Spaces
Recreation Car parking Spaces:	120 Spaces
Total:	190 Spaces

**Recreation Center Building Option C** - Per the zoning requirements 1 parking space is to be provided for every 200 sf. Under this option 86 spaces would be required to accommodate the recreation center.

School Car Parking Spaces:	70 Spaces
Recreation Car parking Spaces:	86 Spaces
Total:	156 Spaces

During the DSUP process we will investigate options to reduce the overall number of parking spaces.

## PLAY AREAS

The project includes age-specific play areas for multiple age groups per community input. These play areas are to be shared with the new School.

- 1 Early Childhood Playground
- 1 Elementary Grade Playground
- 1 Open Recess Area

## FIELDS

The following fields are included based on RPCA direction and the Needs Assessment:

- 1 Grass Multi-use Recreational Space
- 1 Turf Multipurpose court
- 1 Paved Multipurpose court

This is compatible with the City of Alexandria master plan for Athletic Fields.

## DETAILED PROGRAM

Space	# Spaces	SF/space	Gross SF	Comments
<b>Site Amenities</b>				
Playground - Early Childhood	1	4,200	4,200	75 sf/child min, near early childhood classrooms, maintain community access during school hours
Playground - Elementary grades	1	4,200	4,200	75 sf/child min, near elementary grades
Service Entrance/Loading dock	1	-	-	General receiving, away from prevailing winds
Turf court 80' x 53'	1	4,240	4,240	Shared with School
Paved court 80' x 53'	1	4,240	4,240	Shared with School
Multi-use Recreational Space, grass, 315'x210'	1	66,150	66,150	Shared with School
Looped track or trail	1	-	-	Shared with School, measured distance posted on signs
Public Art	1	-	-	Incorporate into site plan

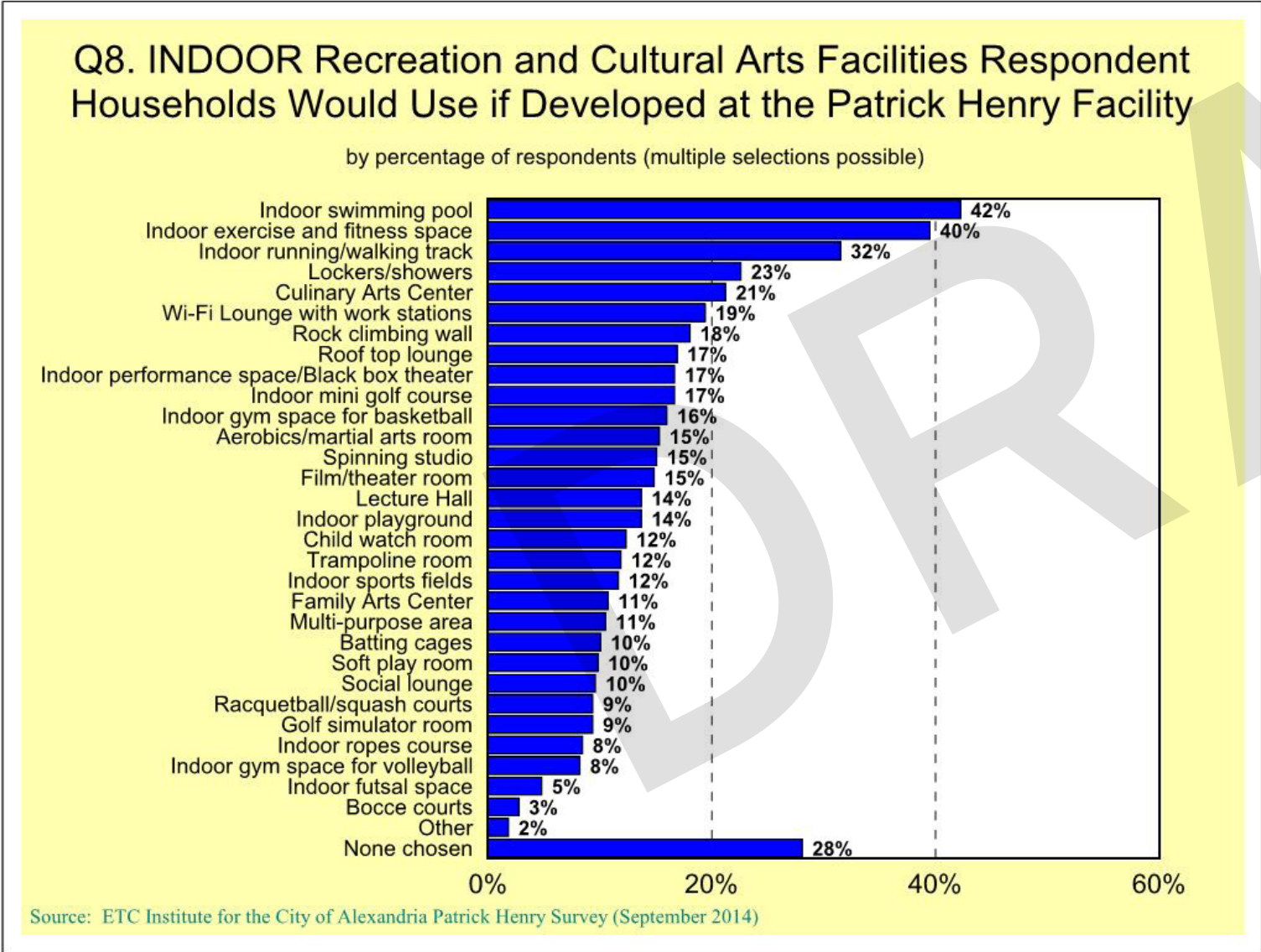




# 03.3 PROPOSED BUILDING PROGRAM I NEEDS ASSESSMENT

## NEEDS ASSESSMENT - INDOOR PROGRAM

The program developed for Patrick Henry Recreation Center building is based on the indoor recreational facilities desired by the community, identified in the 2014 Patrick Henry Facility Survey, illustrated below. All three proposed building options provide multi-use spaces to accommodate majority of indoor activities desired by the community. The diagram on the right illustrates all indoor programs accommodated in the proposed Recreation Center.



### PROPOSED PROGRAMS

INDOOR MULTI-USE  
RECREATIONAL SPACE

RUNNING TRACK

FLEX COURT

MULTI-PURPOSE ROOM

FITNESS ROOM

SCHOOL-SHARED SPACES

### ACTIVITIES ACCOMMODATED

Bocce  
Golf simulator  
Indoor sports fields  
Indoor ropes course  
Batting cages

Indoor walking/running track

Volleyball  
Indoor playground  
Futsal  
Basketball (option c)  
Trampoline

Lecture hall  
Wi-fi lounge  
Film/theater room  
Childcare room  
Family arts center  
Multi-purpose area  
Soft play room  
Social lounge

Indoor exercise and fitness space

Indoor performance space/theater  
Indoor gym for basketball





# 03.3 PROPOSED BUILDING PROGRAM I DETAILED PROGRAM

## PROPOSED RECREATION CENTER PROGRAM

In 2008, a feasibility study was performed which contemplated the renovation and addition to the existing Patrick Henry Recreation Center. This 2008 study contemplated the expansion of the recreational center to include a number of programs that were previously unavailable. Some of the programs in this study include the following:

- Gymnasium
  - Multi-purpose room
  - Kitchen
  - Adult Program Room
  - Craft Room
- Fitness Room
  - Game Area
  - Dance Room
  - Computer Room

In response to the implementation of a cost recovery model of facility management that requires each recreation center to recover 80% of its operational cost a study was prepared by Brailsford and Dunlavey in 2014. Also in 2014 a needs assessment was completed which measured the communities priorities for the recreation center. This study recommended that dedicated single use spaces be replaced with flexible multi-use spaces which could be rented

out for a variety of different activities. It also recommended the inclusion of a new indoor turf field to help achieve this cost recovery. Some of the programs in this study include the following:

- Indoor multi-use recreational space with running track.
  - 84' x 50' Flex court with stands
- Multi-purpose room
  - Fitness Room

The proposed program for Options A, B, and C as shown in this report takes into account the programmatic requirements of the 2008 study, the cost recovery direction of the 2014 study, and the results of the 2014 community needs assessment. Options A and B include an indoor turf multi-use recreational space similar to the one outlined in the 2014 study. Option C includes a larger flex court in lieu of this indoor turf multi-use recreational space. Each of the three proposed options meets the programmatic needs of the 2008 report and the community needs assessment through the use of multi-purpose spaces that allow for a successful cost recovery model. As shown in the spreadsheet below the proposed building program achieves this through an efficient use of space.

Recreation Center	2008 PROPOSED PROGRAM	BRAILSFORD DUNLAVELY STUDY		Option A		Option B		Option C	
				1 story scheme		2 story scheme		1 Story scheme without the fieldhouse	
Lobby/Reception Area	500	0		500		500		500	
Administration	848	500		700	Office area for 6 staff	700	Office area for 6 staff	700	Office area for 6 staff
Gymnasium	4,418	0		+	Provided in the school	+	Provided in the school	+	Provided in the school
Indoor Multi-use Recreational Space	0	11,000	Includes 2 - 100'x50' Fields and Stands	12,000	100'x120' field	12,000	100'x120' field	0	Eliminated in this scheme
Runoff at Perimeter of Field				0	3 lane track at field level serves as runoff	5,856	12' wide runoff area at 4 sides below track	0	
Running Track	0	5,760	4 Lane Track at 400' long	5,856	3 lane track at field level - 12' wide track	5,856	3 lane track at upper level - 12' wide track	3,792	12' wide track at lower level
Flex Court	0	5,200	84'x50' Court with Stands	2,500	50' x 50' flex court	2,500	50' x 50' flex court	4,200	84 x 50
Athletic Storage	0	0		300		300		300	
Multi-purpose Room	1,280	500		1,500	Includes storage	1,500	Includes storage	1,500	Includes storage
Kitchen	250	0		120	Kitchenette for staff	120	Kitchenette for staff	120	Kitchenette for staff
Adult-Program Room	600	0		+	Accomodated in the Multi-purpose Room	+	Accomodated in the Multi-purpose Room	+	Accomodated in the Multi-purpose Room
Crafts Room	850	0		100	100 sf Storage Room added to Multi-Purpose	100	100 sf Storage Room added to Multi-Purpose	850	Separate Craft Room
Weight/Fitness Room	1,200	1,000		1,150	Include 150 sf Storage	1,150	Include 150 sf Storage	1,150	Include 50 sf Storage
Game Area	1,200	0		0		0		0	
Dance Room	700	0		+	Accomodated in the Multi-purpose Room	+	Accomodated in the Multi-purpose Room	+	Accomodated in the Multi-purpose Room
Library/Computer Room	300	0		+	Wi-fi to be provided throughout the facility	+	Wi-fi to be provided throughout the facility	+	Wi-fi to be provided throughout the facility
Toilet	700	2,000		1,000		1,000		1,000	
General Storage	0	0		80		80		80	
Mechanical Room	0	0		300		300		300	
Electrical Room	0	0		75		75		75	
Cubbies	0	0		40		40		40	
Janitor's Closet	0	0		30		30		30	
Total Net SF	12,846	25960		26,251		32,107	* Area includes 5,586 sf track on second floor	14,637	* Area includes 6,336 sf track on second floor
Circulation/Mech/Walls	3,854 (30%)	5,192 (20%)		4,689 (18%)		6,381 (20%)	*20% to include vertical circulation	2,634(18%)	*18% to include vertical circulation
Total Gross SF	16,700	31,152		30,740		38,288		17,271	





# 04.1 DESIGN PRINCIPLES

## CITY OF ALEXANDRIA DESIGN PRINCIPLES

The following design principles were developed by Recreation, Parks and Cultural Activities (RPCA) to guide the design of Patrick Henry campus:

### SITE CIRCULATION

- Site circulation integrated with building design
- Minimize impact from buses and service vehicles on outdoor recreation
- Minimize parking as a spatial focus, explore shared use of parking spaces

### SITE PLAN

- Maintain community access to outdoor recreation spaces during non-school hours
- Minimize walking and surveillance distance for playgrounds
- Combine site uses if possible
- Ensure site plan and access support camp and after school programs
- Maximize potential for outdoor community events
- Maximize outdoor space by building multiple story buildings
- Ensure Athletic Facilities meet VA Guidelines for Public School Facilities
- Where possible, field shall be VA High School standard dimensions
- Integrate public art into site design
- Maximize tree canopy coverage per Urban Forestry Master Plan

### BUILDING

- Clear, secure, architecturally articulated entrances
- Maximize use of existing infrastructure
- Utilize building roof as habitable and/or recreational space
- Orient building to optimize natural light and minimize energy use
- Gymnasium dimensions meet standard established at Jefferson Houston
- Include storage space for recreation and after school needs
- Allow for community control of HVAC & electrical systems separate from school
- Integrate public art into building design

## PROJECT DESIGN PRINCIPLES

This project has taken design inspiration from principles identified by Alexandria RPCA and Sorg Architects, which complement each other well.

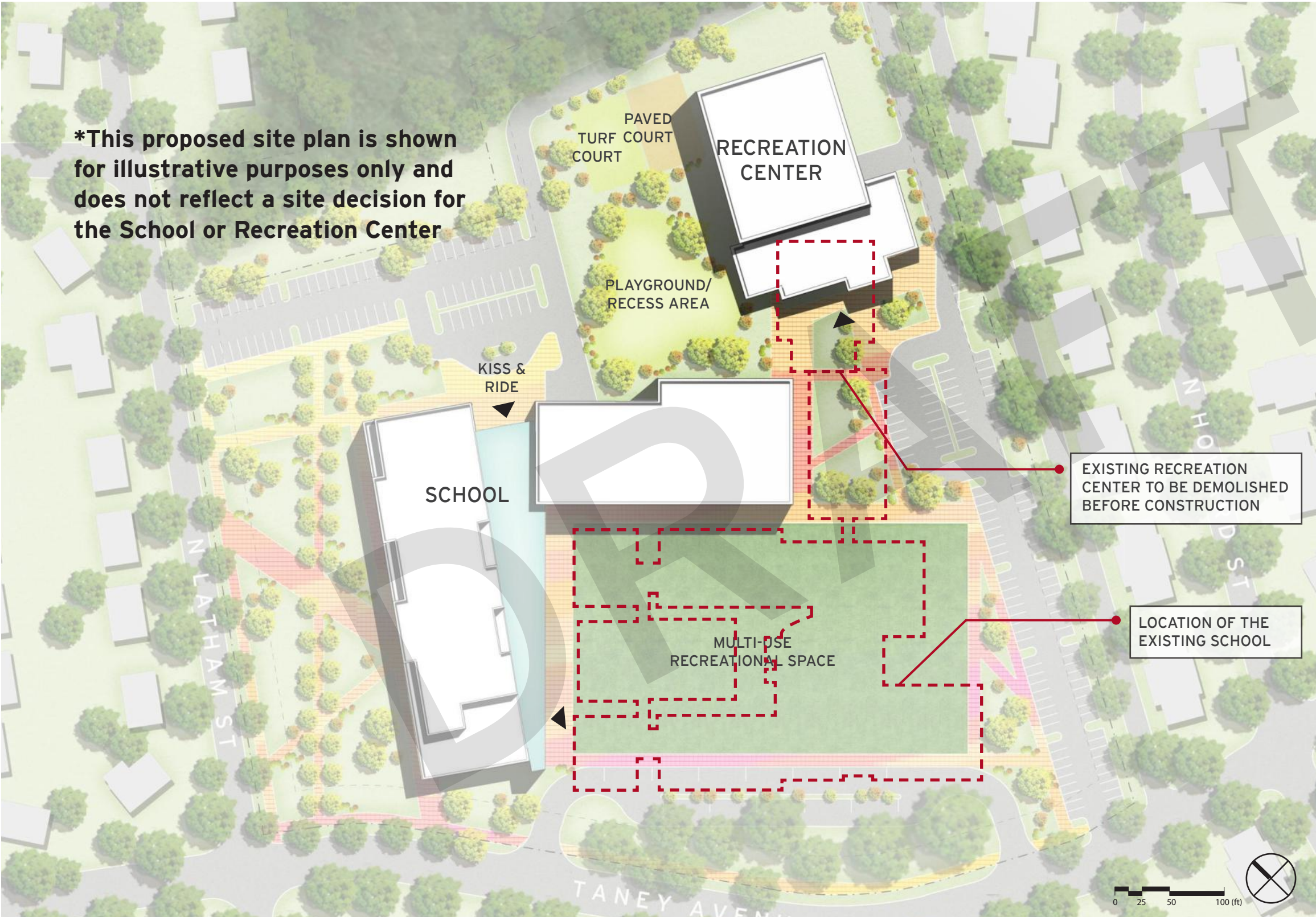
The concept for Patrick Henry stems from the physical site and **community context**. The natural setting is a pastoral clearing in a wooded plateau, framed by a densely forested slope to the north. Within the **green surroundings** lies a vibrant community, with Patrick Henry as its social focal point. The Recreation Center will serve as a **lung for the community**. A place to grow, learn, develop, refresh and recharge. Patrick Henry is a place that gives life to its surroundings, both physically and socially. The following design goals are essential components of the project.

- Maximize use of outdoor public space
- Optimize Recreation Center site location to be visible from the street, easily accessible, and have an appropriate relationship to the School
- Maximize open space on the site
- Efficient, secure, functional and pleasing interior layout
- Design to **LEED Silver** or better to serve as a sustainable model for the community
- Promote occupant **health, and comfort and enjoyment** through a building design that interacts with nature





# 04.2 PROPOSED SITE PLANS | SITE OPTION 2.1 (COMMUNITY CENTER OPTION A & B FREE-STANDING)



## SUMMARY

Site option 2.1 shows a free-standing Recreation Center on the northeast corner of the site. This option works with both Community Center Option A and Option B.

## PROS

- Recreation Center has a clear, separate identity from the School
- Recreation Center is visible from Taney Ave.
- Has no impact on the interior layout of the School
- Convenient vehicular access; drop-off/pick-up area provided near the Recreation Center entrance
- Loading area hidden behind the building

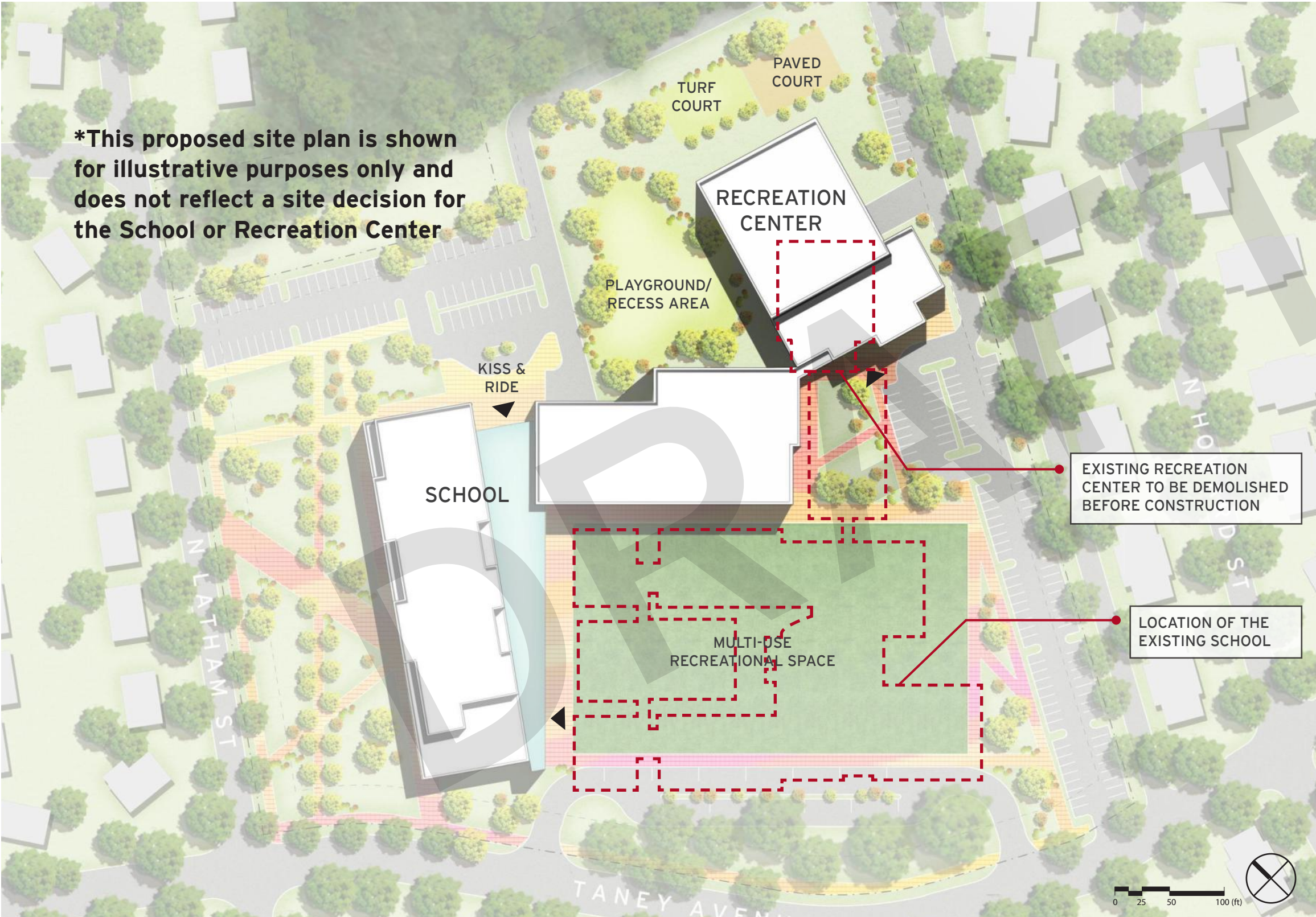
## CONS

- Smaller open play area adjacent to the Recreation Center compared to Site Option 2.2 and 2.3
- No physical connection to School building requires walking outside to access shared spaces





# 04.2 PROPOSED SITE PLANS | SITE OPTION 2.2 (COMMUNITY CENTER OPTION A & B ATTACHED)



## SUMMARY

Site option 2.2 shows the Recreation Center attached to the east wing of the School. This option works with both Community Center Option A and Option B. This option has a clear, separate identity from the School with an enclosed connection to shared spaces in the School.

## PROS

- Recreation Center has a clear, separate entrance away from the School
- Recreation Center is visible from Taney Ave.
- Large open play area adjacent to the Recreation Center
- Connection to the school provides direct access to shared spaces
- Convenient vehicular access; drop-off/pick-up area provided near the Recreation Center entrance
- Loading area hidden behind the building

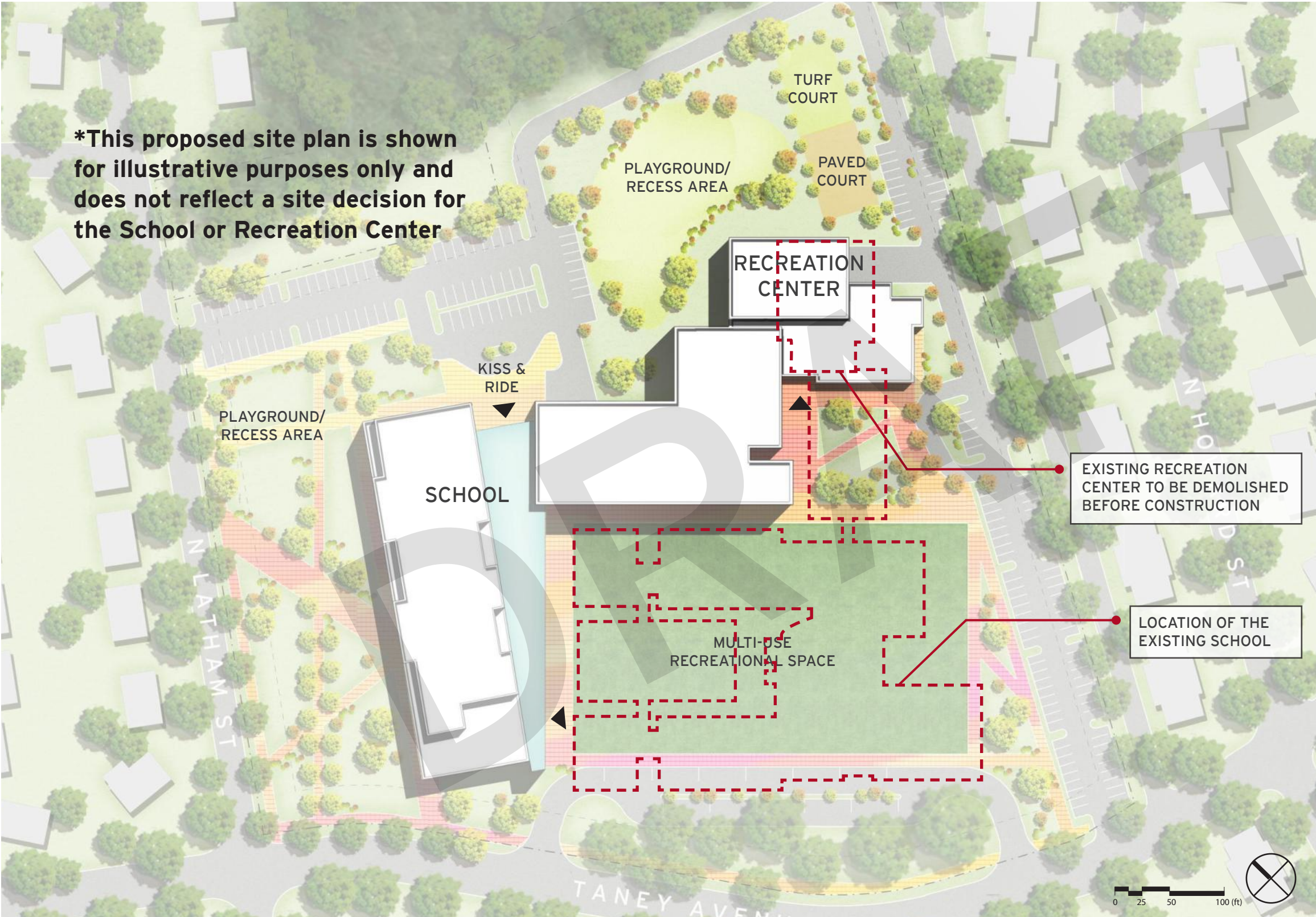
## CONS

- Physical connection to School poses security risks for both School and Recreation Center
- The connection to the School makes site circulation difficult. Access to the rear of the site requires going around the building





# 04.2 PROPOSED SITE PLANS | SITE OPTION 2.3 (NEIGHBORHOOD CENTER OPTION)



## SUMMARY

Site option 2.2 shows the Recreation Center Neighborhood Center Option attached to the east wing of the School. This option has less separate identity from the School but provides a direct access and visibility into the shared spaces in the School.

## PROS

- Recreation Center is visible from Taney Ave.
- Largest open play area adjacent to the Recreation Center
- Connection to the school provides direct access to shared spaces
- Convenient vehicular access; drop-off/pick-up area provided near the Recreation Center entrance
- Loading area hidden behind the building

## CONS

- Entrance to the Recreation Center is in close proximity to the School building
- Recreation Center appears secondary to School building and lacks independent identity





# 04.3 PROPOSED BUILDING PLANS | COMMUNITY CENTER OPTION A

PROGRAM	PROVIDED SF	NOTES
Lobby/Reception	960	
Administration	620	Office area for 6 staff
Gymnasium	*	Provided in the school
Indoor Multi-use Recreational Space	12,000	100' x 120'
Runoff at Perimeter of Recreational Space	0	3 lane track at field level serves as runoff
Running Track	5,856	3 lane track at field level - 12' wide track
Flex Court	2,500	50' x 50' Flex Court
Athletic Storage	300	
Multi-purpose Room	1,500	Include storage
Kitchen	100	Kitchenette for staff
Adult-Program Room	*	Accommodated in the Multi-purpose Room
Crafts Room	120	Storage Room added to Multi-purpose Room
Weight/Fitness Room	1,200	Include 150 sf Storage
Game Area	0	
Dance Room	*	Accommodated in the Multi-purpose Room
Library/Computer Room	*	Wi-fi to be provided throughout the facility
Toilet	990	
General Storage	120	
Mechanical Room	310	
Electrical Room	110	
Cubbies	0	
Janitor's Closet	30	
<b>Total Gross SF</b>	<b>28,156</b>	
Pre-engineered shell area	17,856	
Non pre-engineered shell area	10,300	

## SUMMARY

Community Center Option A is a one-story building scheme that can be either free-standing or attached to the new School. It has a 100' x 120' multi-use recreational space with a 12' track/runoff area around the perimeter within the pre-engineered shell of the building. Flex Court, Multi-purpose Room (with a sink for Crafts), Fitness Room and Administration office are provided in the non-pre-engineered portion of the building. Community Center Option A also has a spacious main lobby area to accommodate reception and some breakout space.

## PROS

- Clear, separate entrance even when attached to the School
- Flexible design - can be attached to the new School or free-standing
- Large indoor multi-use recreational space provided
- Reception desk has visibility to both Recreation Center entrance and entrance from the school
- Large lobby area

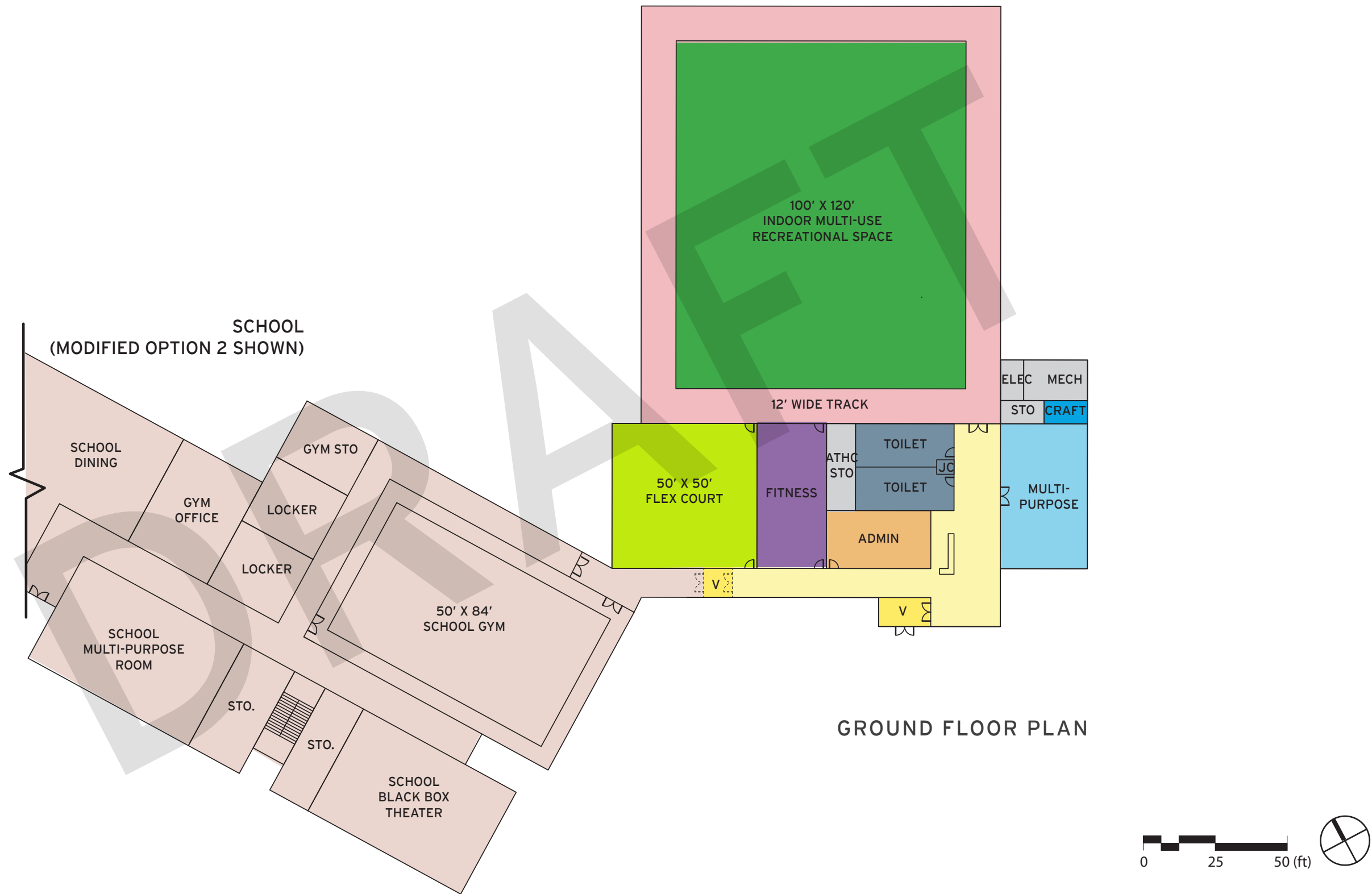
## CONS

- Using track around the indoor multi-use recreational space as runoff space potentially creates conflict





04.3 PROPOSED BUILDING PLANS | COMMUNITY CENTER OPTION A



# 04.3 PROPOSED BUILDING PLANS | COMMUNITY CENTER OPTION B

PROGRAM	PROVIDED SF	NOTES
Lobby/Reception	1,000	
Administration	790	Office area for 6 staff
Gymnasium	*	Provided in the school
Indoor Multi-use Recreational Space	12,000	100' x 120'
Runoff at Perimeter of Recreational Space	5,856	12' wide runoff area a 4 sides below track
Running Track	5,856	3 lane track at second level - 12' wide track
Flex Court	2,500	50' x 50' Flex Court
Athletic Storage	300	
Multi-purpose Room	1,500	Include storage
Kitchen	120	Kitchenette for staff
Adult-Program Room	*	Accomodated in the Multi-purpose Room
Crafts Room	100	Storage Room added to Multi-purpose Room
Weight/Fitness Room	1,500	Include 150 sf Storage
Game Area	0	
Dance Room	*	Accomodated in the Multi-purpose Room
Library/Computer Room	*	Wi-fi to be provided throughout the facility
Toilet	1,250	
General Storage	80	
Mechanical Room	310	
Electrical Room	110	
Cubbies	80	
Janitor's Closet	30	
Total Gross SF	36,972	
Pre-engineered shell area	17,856	
Second Floor Track	5,856	
First FI non pre-eng shell area	9,740	
Second FI non pre-eng shell area	3,520	

## SUMMARY

Community Center Option B is a two-story version of Option A that can also be either free-standing or attached to the new School. It has a 100' x 120' multi-use recreational space with a 12'-wide runoff area within the pre-engineered shell of the building. The second floor provides access to the 12'-wide track directly above the runoff area. Flex Court, Multi-purpose Room (with a sink for Crafts), and Administration office are located on the ground floor of the building while the Fitness Room is located on the second floor in close proximity to the elevated track.

## PROS

- Clear, separate entrance, even when attached to the School
- Flexible design - can be attached to the new School or free-standing
- Two-story scheme allows tall ceiling height for the lobby adding a sense of spaciousness; ample lobby space provided
- Large indoor multi-use recreational space provided
- Runoff area around the multi-use recreational space provides space for spectators, staging and warm-ups
- Elevated track above the field creates a viewing deck
- Second floor open to Flex Court below, creates viewing deck

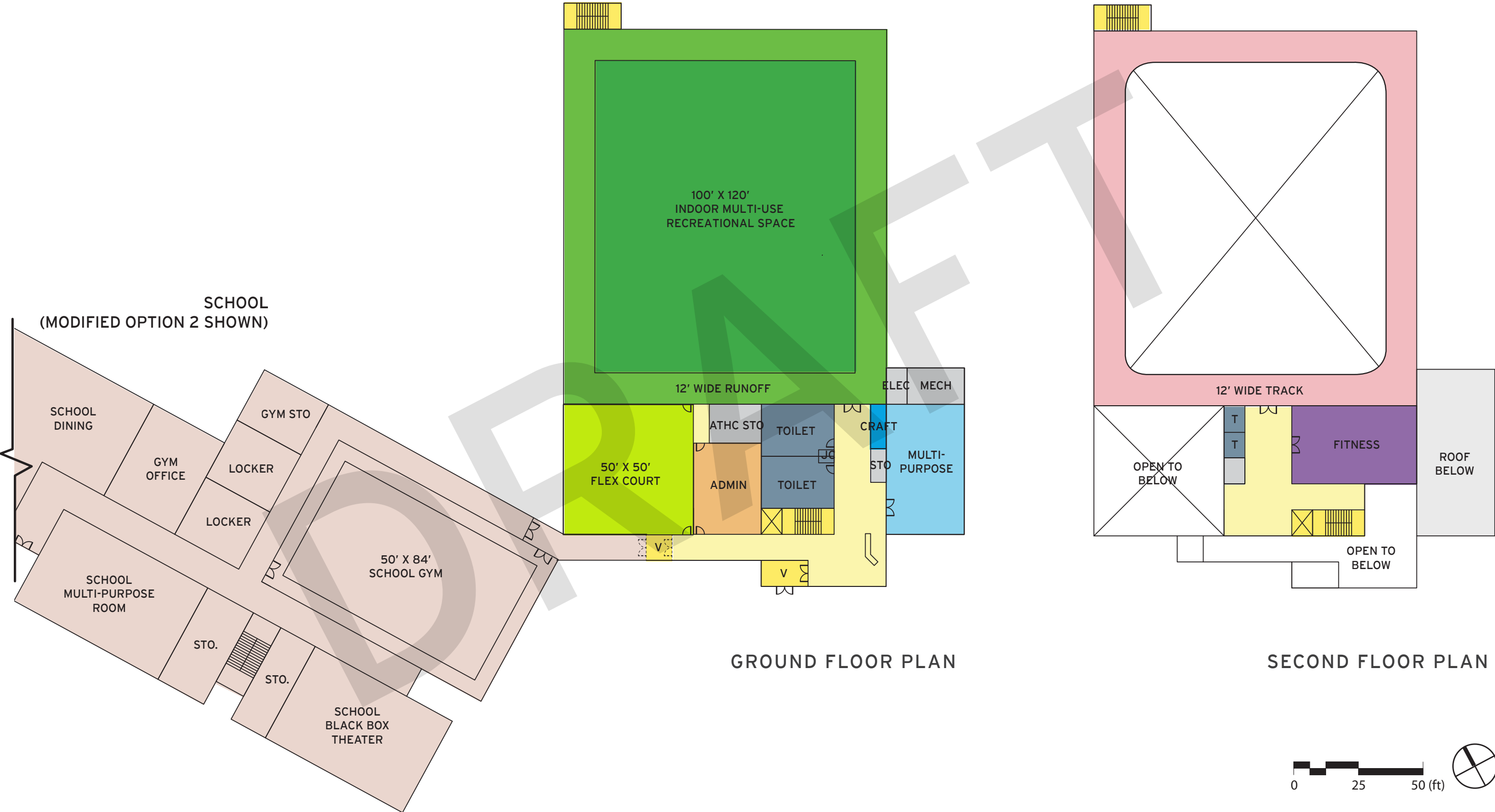
## CONS

- Two-story scheme has higher cost





04.3 PROPOSED BUILDING PLANS | COMMUNITY CENTER OPTION B



# 04.3 PROPOSED BUILDING PLANS | NEIGHBORHOOD CENTER OPTION

PROGRAM	PROVIDED SF	NOTES
Lobby/Reception	1120	
Administration	700	Office area for 6 staff
Gymnasium	*	Provided in the school
Indoor Multi-use Recreational Space	0	Eliminated in this scheme
Runoff at Perimeter of Recreational Space	0	
Running Track	3,792	3 lane track - 12' wide track at lower level
Flex Court	4,200	50' x 84' Flex Court
Athletic Storage	306	
Multi-purpose Room	1,600	Include storage
Kitchen	100	Kitchenette for staff
Adult-Program Room	*	Accommodated in the Multi-purpose Room
Crafts Room	840	Separate Craft Room
Weight/Fitness Room	1,200	Include 150 sf Storage
Game Area	0	
Dance Room	*	Accommodated in the Multi-purpose Room
Library/Computer Room	*	Wi-fi to be provided throughout the facility
Toilet	1,030	
General Storage	240	
Mechanical Room	336	
Electrical Room	120	
Cubbies	0	
Janitor's Closet	30	
Total Gross SF	17,116	

## SUMMARY

Neighborhood Center Option is a one-story building scheme with no indoor multi-use recreational space. Instead, a larger (50' x 84') Flex Court is provided with a 12' track around its perimeter that doubles as a runoff area. In addition to the Multi-purpose Room and Fitness Room also provided in the other building options, this option provides a separate Crafts Room providing more rooms for programming. This option also has the most spacious main lobby area with visibility to all entrances/exits, Recreation Center Flex Court and School Gym.

## PROS

- Separate Crafts Room
- Large lobby/reception area
- Reception desk has visibility to both the Recreation Center Flex Court and the School gymnasium
- Reception desk has visibility to both Recreation Center entrance and entrance from the School
- Multi-purpose Room can be divisible for multiple events to occur simultaneously

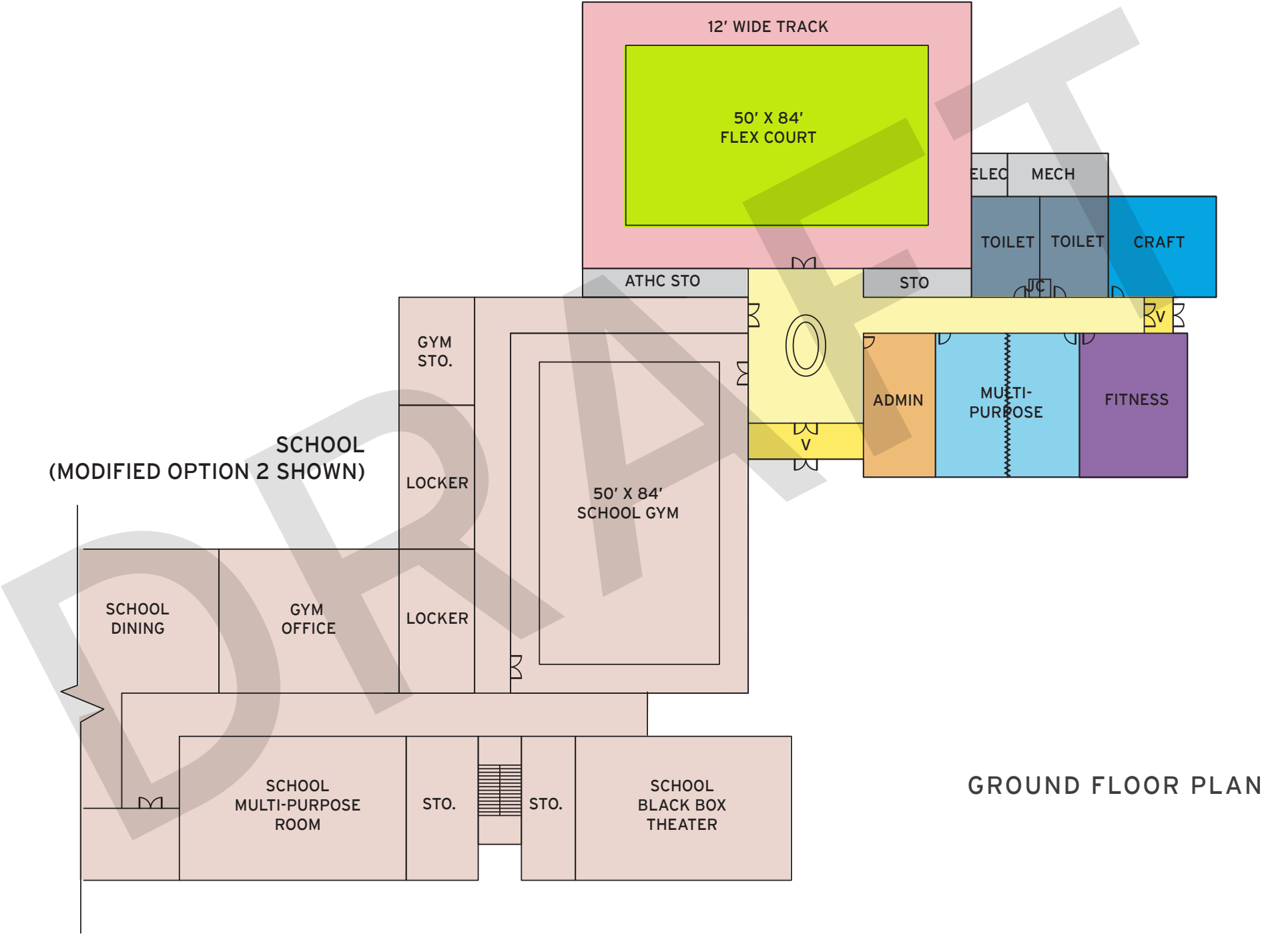
## CONS

- No indoor multi-use recreational space. 50' x 84' Flex Court provided instead.
- Using track around the indoor multi-use recreational space as runoff space potentially creates conflict
- Recreational Center entrance is in close proximity to the School building
- No free-standing option





04.3 PROPOSED BUILDING PLANS | NEIGHBORHOOD CENTER OPTION



# 05.1 PROPOSED CIVIL STRATEGIES

## STORMWATER

The completed project will include stormwater mitigation practices as needed to meet code requirements for stormwater quality and quantity as defined in the **2014 City Ordinance**.

### WATER QUALITY

- Storage requirements will range from 11,470 cf to 12,808 cf.
- Green roofs on school buildings
- Bio-retention areas
- Dry swale
- Permeable pavers
- Rainwater harvesting for use in irrigation
- Possible outdoor classrooms integrating stormwater management techniques

### WATER QUANTITY

- Prevent erosion and flooding
- Existing outfall from site will be sufficient in new design
- Bio-retention areas and swales
- Underground stormwater facilities

## PARKING

Refer to section 03.2 Proposed Site Program, for proposed parking.

## PROPOSED GRADING & DRAINAGE

- New school & Rec center will be graded and sited in a fashion that allows the existing school to continue to function during construction.
- Existing drainage patterns will need to be mostly maintained.
- The new school and recreation building will be relatively close in finished grade elevations to maintain a walkable and accessible site.
- New construction will balance cut & fill with cuts from construction used to replace the void left from the demolition of the existing school and creation of proposed fields.
- Cut material from the removal of the existing tennis courts will be transferred to the new parking lots and the areas to the south and west of the site.
- Loop road will approach grades 10 - 12 feet higher than the rest of the site as rounds the northwest corner of the site
- The new buildings will sit at moderate grade slightly above Taney Avenue and North Latham Avenue to accommodate the drainage patterns from the north side of the site.
- Runoff will be captured, treated and directed to the current outfalls via a storm pipe network that will be design around the existing school.
- All stormwater management will occur on-site.





# 05.2 PROPOSED STRUCTURAL SYSTEM

## INTRODUCTION

Options A & B include a pre-engineered structure, option C does not. Recommendations for a structural system for each option are as follows:

### COMMUNITY CENTER OPTION A

- The structural engineer will design the foundation of the pre-engineered long span structure as well as the 2-Story Facility Space.
- The adjacent Facility Space will be a steel framed structure, with CMU or light gauge infill walls.

### COMMUNITY CENTER OPTION B

- The structural engineer will design the foundation of the pre-engineered long span structure as well as the 2-Story Facility Space.
- The prefabricated long span structure design will need to accommodate the elevated running track. Calculations shall include consideration of vibrational and impact loads for the elevated track.
- The adjacent Facility Space will be a steel framed structure, with CMU or light gauge infill walls.
- The elevated Second Floor will need to be evaluated for proposed fitness space use including vibrational aspects associated with weight lifting and cardio equipment.

## NEIGHBORHOOD CENTER OPTION

- Framing of the recreational addition to school Option 2 will consist of structural steel columns supported on shallow spread footing foundations.
- Steel wide-flange girders span between steel columns to extend the grid of structural bays.
- The roof structure will consist of 2+'' normal-weight concrete slab over 1-1/2'' 20 GA metal deck (assumed total depth of 3+'' ) spanning between open-web steel joists spaced at 5'-0'' on center spanning from exterior perimeter walls to the corridor walls.
- The roof structure over the flex court with perimeter walking/running track will be framed with long-span steel trusses to perimeter steel columns and/or CMU bearing walls.
- In order to accommodate the open geometry and proposed window framing between structural steel framing, the lateral system may consist of structural steel Braced Frames or Moment Frames.

### 1. Braced Frames:

- Cons: Diagonal braces between columns may visually extend through open glass extents at exterior and interior walls.
- Pros: Reduced size of structural steel framing (weight)  
Connections are less expensive and labor intensive as compared to moment frame connections.

### 2. Moment Frames:

- Cons: Column and beam framing sizes are significantly heavier per linear foot than required for braced frames. Often increase required depth of ceiling structure.  
Connections are more expensive and labor intensive.
- Pros: Allows for large extents of visually uninterrupted glass extents at exterior and interior walls.



# 05.3 PROPOSED MEP AND FIRE PROTECTION SYSTEMS

## MECHANICAL SYSTEM

### INTRODUCTION

The Recreation Center will feature **state-of-the-art HVAC** systems throughout.

### NEW BUILDING HVAC SYSTEMS

Depending on the system type, the recreation center can either be connected to the Elementary School mechanical system or can be totally independent. The following highly efficient systems could be used for the Recreation Center:

- DX Rooftop Packaged Cooling with Natural Gas Heat
- Water Cooled Chillers with Natural Gas Boilers
- Water Source Heat Pumps with Geothermal Ground Source Piping

For the indoor multi-use field:

- Large propeller fans and radiant heating can maintain the space at a temperature between 80°F - 85°F in the summer and 70 °F in the winter.
- To achieve a cooler summer environment, HVAC systems similar to the school and the remainder of the Recreation Center could be utilized, depending on owner preference and at an additional cost.

## ELECTRICAL SYSTEM

The following electrical service components are recommended:

- Complete lightning grounding protection system
- LED lights throughout
- Lighting control system including occupancy sensors and time clocks
- Daylight harvesting where appropriate
- New fire alarm system

## PLUMBING SYSTEM

New plumbing fixtures to preserve resources and reduce energy

- Low flow fixtures
- High efficiency water heaters
- Domestic hot water circulation loops

## FIRE PROTECTION SYSTEM

The new Recreation Center will be equipped with a fire protection system to meet current code. Some features include:

- Automatic sprinkler system throughout
- Sprinkler fire pump if necessary
- New fire detection and monitoring system





## 05.4 PROPOSED SUSTAINABILITY STRATEGIES

### INTRODUCTION

The new or renovated Patrick Henry School is envisioned to be a high performance sustainable building. Integrated design will be used throughout the process to create an exemplary green building with a reduction in energy consumption of 30% - 40%. The building will be **LEED Silver** minimum and net zero options will be investigated.

### ENVELOPE

- Increased insulation
- Reflective or green roof
- Balanced ratio of windows to walls
- High performance glazing
- External shading

### ENERGY USAGE

- LED lights
- Daylight and occupancy sensors
- Energy-efficient equipment

### HVAC EFFICIENCY

- Occupancy or CO2 sensors to regulate ventilation
- High efficient energy recovery equipment

### SITE SUSTAINABILITY OPTIONS

- Ground source heat pumps
- Photovoltaics
- A reduction in the amount of site parking below that required by zoning will be investigated



05.4 PROPOSED SUSTAINABILITY STRATEGIES

LEED CERTIFICATION

The design options were evaluated to determine the preliminary LEED New Construction scorecards.

The Recreation Center will use the LEED 2009 rating system. Depending on the option developed, more information will be needed to move credits from the ‘maybe’ categories into either a ‘yes’ or a ‘no’. These are early conservative estimates which need to be confirmed as the project moves into the design stages.

The LEED Campus Certification option is a way to reduce costs and streamline the certification process for projects that share a site and are owned by a single entity. As part of a Campus Certification, certain prerequisites and credits are reviewed and pre-approved as campus credits. All prerequisites and credits earned as part of the campus “master site” can be claimed by all LEED projects within that master site, thereby reducing documentation requirements, saving time and costs. There are additional costs for the Campus Certification, but individual projects located within the master site receive discounted fees.

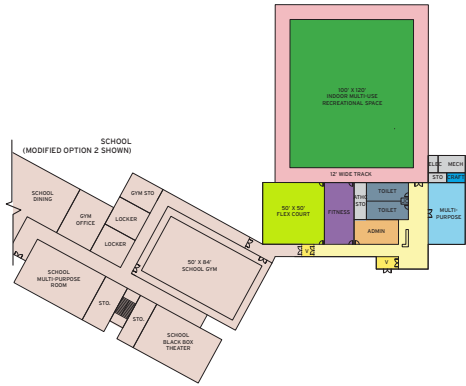
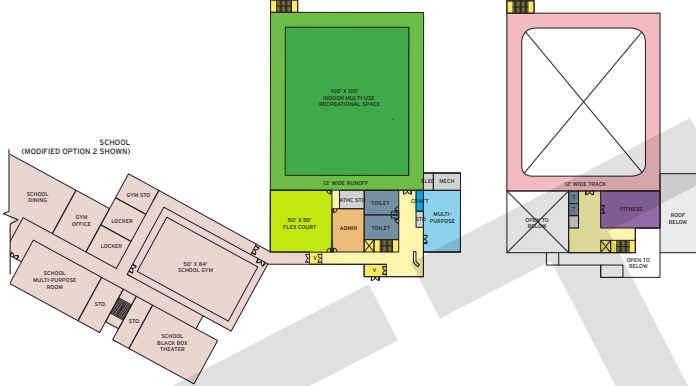
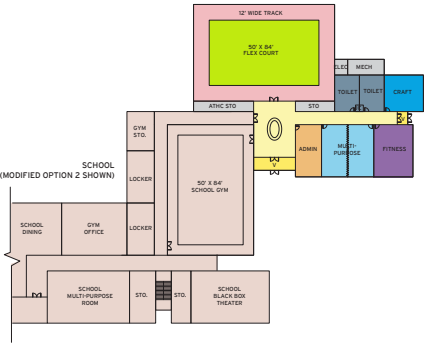
SAMPLE LEED SCORECARD FOR NEW CONSTRUCTION

7	17	0	Sustainable Sites		Possible Points:	24	10	8	1	Indoor Environmental Quality		Possible Points:	19
Y	?	N					Y						
Y			Prereq 1	Construction Activity Pollution Prevention			Y			Prereq 1	Minimum Indoor Air Quality Performance		
Y			Prereq 2	Environmental Site Assessment			Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control		
1			Credit 1	Site Selection	1		Y			Prereq 3	Minimum Acoustical Performance		
	4		Credit 2	Development Density and Community Connectivity	4		1			Credit 1	Outdoor Air Delivery Monitoring	1	
	1		Credit 3	Brownfield Redevelopment	1				1	Credit 2	Increased Ventilation	1	
	4		Credit 4.1	Alternative Transportation—Public Transportation Access	4		1			Credit 3.1	Construction IAQ Management Plan—During Construction	1	
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1		1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1	
2			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	2		4			Credit 4	Low-Emitting Materials—Adhesives and Sealants	1 to 4	
	2		Credit 4.4	Alternative Transportation—Parking Capacity	2			1		Credit 5	Indoor Chemical and Pollutant Source Control	1	
	1		Credit 5.1	Site Development—Protect or Restore Habitat	1		1			Credit 6.1	Controllability of Systems—Lighting	1	
	1		Credit 5.2	Site Development—Maximize Open Space	1			1		Credit 6.2	Controllability of Systems—Thermal Comfort	1	
	1		Credit 6.1	Stormwater Design—Quantity Control	1		1			Credit 7.1	Thermal Comfort—Design	1	
1			Credit 6.2	Stormwater Design—Quality Control	1		1			Credit 7.2	Thermal Comfort—Verification	1	
1			Credit 7.1	Heat Island Effect—Non-roof	1			3		Credit 8.1	Daylight and Views—Daylight	1 to 3	
1			Credit 7.2	Heat Island Effect—Roof	1			1		Credit 8.2	Daylight and Views—Views	1	
	1		Credit 8	Light Pollution Reduction	1			1		Credit 9	Enhanced Acoustical Performance	1	
	1		Credit 9	Site Master Plan	1			1		Credit 10	Mold Prevention	1	
	1		Credit 10	Joint Use of Facilities	1								
5	6	0	Water Efficiency		Possible Points:	11	6	0	0	Innovation and Design Process		Possible Points:	6
Y			Prereq 1	Water Use Reduction—20% Reduction			1			Credit 1.1	Innovation in Design: Green Cleaning Program	1	
2	2		Credit 1	Water Efficient Landscaping	2 to 4		1			Credit 1.2	Innovation in Design: Education and Outreach	1	
	2		Credit 2	Innovative Wastewater Technologies	2		1			Credit 1.3	Innovation in Design: Exemplary Performance, TBD	1	
2	2		Credit 3	Water Use Reduction	2 to 4		1			Credit 1.4	Innovation in Design: Exemplary Performance, TBD	1	
1			Credit 4	Process Water Use Reduction	1		1			Credit 1.5	Innovation in Design: Exemplary Performance, TBD	1	
							1			Credit 2	LEED Accredited Professional	1	
10	23	0	Energy and Atmosphere		Possible Points:	33	0	4	0	Regional Priority Credits		Possible Points:	4
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems				1		Credit 1.1	Regional Priority: EAc1	1	
Y			Prereq 2	Minimum Energy Performance				1		Credit 1.2	Regional Priority: EAc2	1	
Y			Prereq 3	Fundamental Refrigerant Management				1		Credit 1.3	Regional Priority: SSc6.1	1	
5	14		Credit 1	Optimize Energy Performance	1 to 19			1		Credit 1.4	Regional Priority: SSc5.1	1	
	7		Credit 2	On-Site Renewable Energy	1 to 7								
2			Credit 3	Enhanced Commissioning	2								
1			Credit 4	Enhanced Refrigerant Management	1								
2			Credit 5	Measurement and Verification	2								
	2		Credit 6	Green Power	2								
5	3	5	Materials and Resources		Possible Points:	13							
Y			Prereq 1	Storage and Collection of Recyclables	0								
		2	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 2								
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1								
1	1		Credit 2	Construction Waste Management	1 to 2								
		2	Credit 3	Materials Reuse	1 to 2								
2			Credit 4	Recycled Content	1 to 2								
1	1		Credit 5	Regional Materials	1 to 2								
		1	Credit 6	Rapidly Renewable Materials	1								
1			Credit 7	Certified Wood	1								





06.1 PROJECT COST SUMMARY

COMPONENTS	OPTIONS		
			
	COMMUNITY CENTER OPTION A	COMMUNITY CENTER OPTION B	NEIGHBORHOOD CENTER OPTION
NEW RECREATION CENTER	\$ 5,728,037	\$ 6,914,709	\$ 4,071,429
BUILDING DEMOLITION	\$ 86,283	\$ 86,283	\$ 86,283
SITEWORK	\$ 1,664,454	\$ 1,664,454	\$ 1,664,454
TOTAL COST	\$ 7,478,774	\$ 8,665,446	\$ 5,822,166



# 06.2 PROJECT LIFE CYCLE COST

	INITIAL COST	YEARLY UTILITY COST	MAINTENANCE COST	LCCA
DX ROOFTOP PACKAGED UNITS	\$ 5,855,850	\$ 98,807	\$ 45,000	\$ 8,370,928
CHILLERS AND BOILER PACKAGE	\$ 6,084,000	\$ 85,311	\$ 60,000	\$ 7,683,312
WATER SOURCE HEAT PUMPS WITH GEOTHERMAL	\$ 7,605,000	\$ 59,694	\$ 52,000	\$ 10,099,783

## RECOMMENDATIONS




Space differences in regards to each option may play a role in selection. For the DX Rooftop Packaged units, this option requires the least amount of space within the building. Equipment is located on the roof, ductwork is distributed through the school and terminal boxes are located above the ceiling. The chiller/boiler package will required a central mechanical room, and mechanical rooms to house Air Handling Units. Terminal boxes and ductwork will be located above the ceilings. For the Water Source Heat Pump option, the heat pumps will be located above the ceiling with the ductwork. There will be a small mechanical room housing the pumps and piping manifolds.

The Life Cycle Cost Analysis (LCCA) provides valuable economic data to make an educated recommendation for the HVAC systems. The recommendation for the system is based on sustainability objectives, first costs, and operating costs. Based on the LCCA, Arup views the DX Rooftop Packaged Units as the most economical, sustainable, and overall best package from a value standpoint. This system will provide the required zoning, the best temperature reset, and also provide the energy usage and savings for the school. If high efficient DX Roof Top Units are selected with energy recovery, step down capacity reduction and variable speed fans, these units will provide reliable and dependable systems for the facility.





# 7.1 COMPARISON OF DESIGN OPTIONS

REQUIREMENTS \ OPTIONS									
	SITE OPTION 2.1			SITE OPTION 2.2			SITE OPTION 2.3		
MEETS REC CENTER PROGRAM	✓			✓			✓		
MEETS SITE PROGRAM	✓			✓			✓		
SITE ORGANIZATION	Recreation Center is free-standing on the northeast corner of the site. Both building option A and B works with this site plan.			Recreation Center is attached to the east wing of the new School. Both building option A and B works with this site plan.			Recreation Center is attached to the east wing of the new School. Building option C is shown in this site plan.		
BUILDING ORGANIZATION	Community Ctr A - 1-story scheme with an indoor multi-use recreational space Community Ctr B - 2-story scheme with an indoor multi-use recreational space			Community Ctr A - 1-story scheme with an indoor multi-use recreational space Community Ctr B - 2-story scheme with an indoor multi-use recreational space			Neighborhood Center Option - 1-story scheme with no indoor multi-use recreational space. Larger Flex Court (50' x 84') provided		
CONSTRUCTION	Existing Recreation Center to be demolished before construction			Existing Recreation Center to be demolished before construction			Existing Recreation Center to be demolished before construction		
PARKING	120 spaces estimated for Rec Center 70 spaces for School. Total-190 spaces			120 spaces estimated for Rec Center 70 spaces for School. Total-190 spaces			86 spaces required for Rec Center 70 spaces for School. Total- 156 spaces		
OPEN SPACE	Smaller open play area adjacent to the Recreation Center			Large open play area adjacent to the Recreation Center			Large open play area adjacent to the Recreation Center		
TOTAL COST	\$ 7,478,774 (Community Center A) \$ 8,665,446 (Community Center B)			\$ 7,478,774 (Community Center A) \$ 8,665,446 (Community Center B)			\$ 5,822,166 (Neighborhood Center)		

